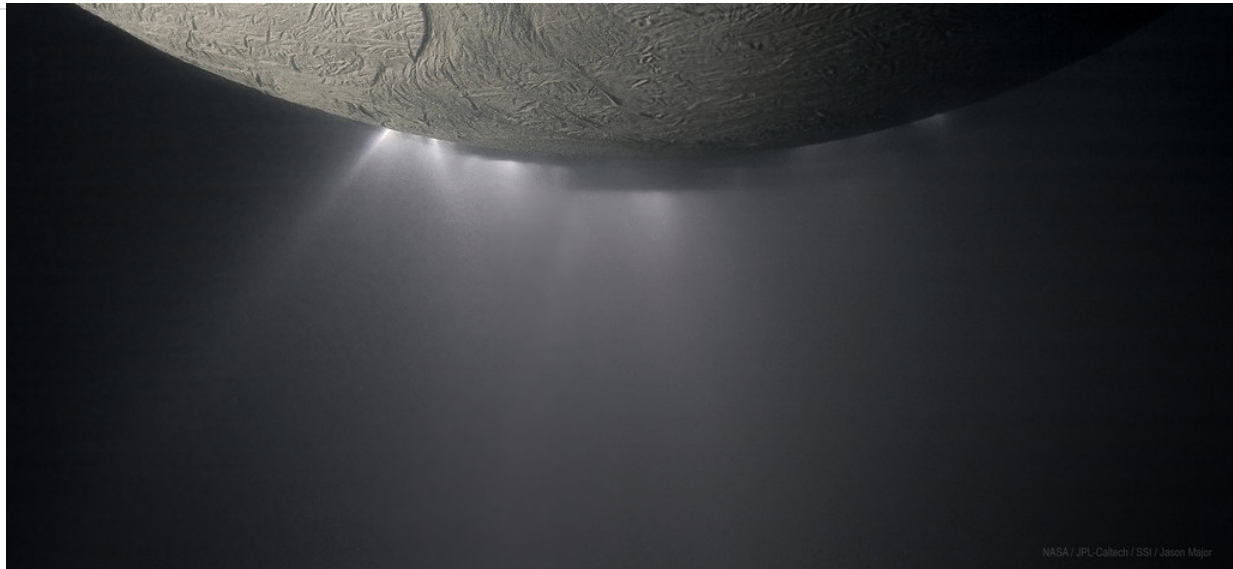


12.3: Medium-Sized Moons



Geysers of water have been detected erupting from the south polar region of Iapetus.

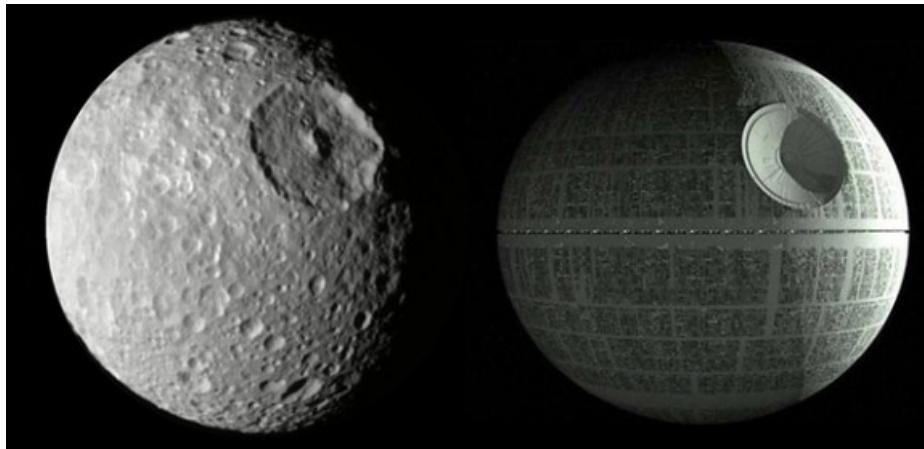
<https://www.flickr.com/photos/lightsinthedark/41100060804>;

There are many more medium-sized moons than large ones. The measurements of the densities of these moons suggest that they are rock and water ice. Saturn has several medium moons including Enceladus. Like Europa, Enceladus is an icy world with a possible liquid ocean underneath. The Cassini probe found geysers of water erupting from the surface in the south polar region, giving evidence for a water interior.



Saturn's moon Iapetus is 907 miles (1,460 km) in diameter and has a dual personality. One hemisphere is covered with bright ice, the other with darker material possibly ejected by impacts on the more distant moon Phoebe. The icy side is five times as bright as the darker side. Iapetus also has a curious ridge around much of its equator.

Mimas has a huge crater Herschel named after the discoverer of the moon. The crater's diameter is 130 km, which is almost a third of the moon's own diameter. Herschel's walls are over 5 km high and its central peak rises to up to 6 km. Some parts of the crater go as deep as 10 km. Mimas is sometimes called the "Death Star Moon" because its huge crater resembles the laser dish on the space station from the Star Wars movies.



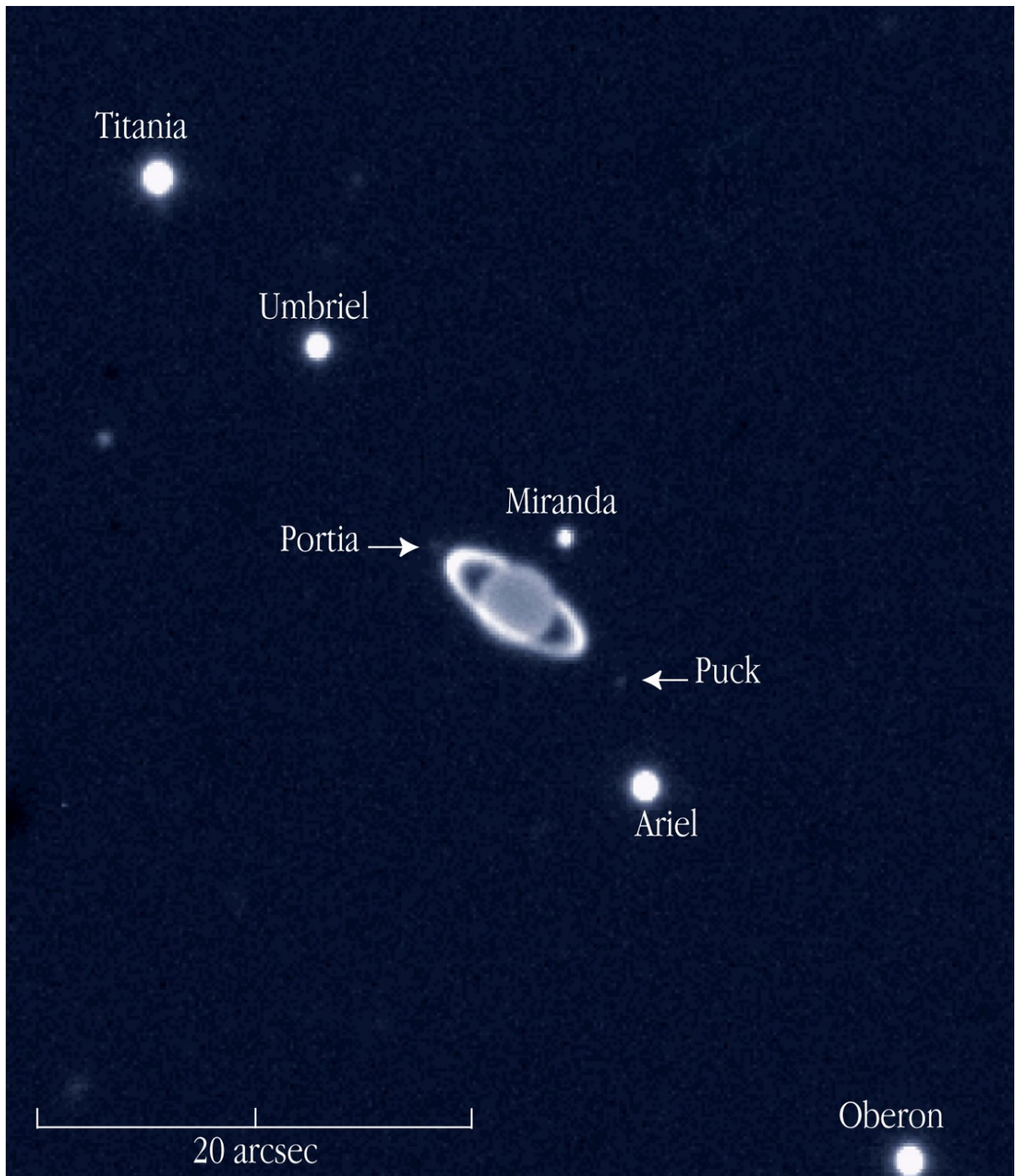
Mimas and its large crater, Herschel.

<https://www.flickr.com/photos/cosmobc/4484688366/lightbox;>



Many of Uranus' moons are named after characters from Shakespeare's plays. One, Miranda, shows evidence of a violent past, although the origin of the surface features is unknown. Miranda has large tectonic features and few craters, possibly indicating an episode of tidal heating in past.

Why are the icy moons more active than larger rocky planets like Mars or Mercury? One might think being further away from the Sun would give them quieter interiors. However, rock melts at higher temperatures than ice. Only large rocky planets have enough heat for activity, which in the Solar System means Earth and possibly Venus. Since ice melts at lower temperatures, tidal heating can melt internal ice, driving activity.



Uranus and several of its moons.

<https://commons.wikimedia.org/wiki/File:Uranus-Moons.jpg>

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